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(54) SEMICONDUCTOR CHEMICAL SENSOR

(57) Abstract:

PURPOSE: To examine a minute specimen, by forming a hydrophobic polymer membrane on the insulating gate film of IGFET formed on the same substrate and further exposing said polymer membrane to electrically accelerated particles.

CONSTITUTION: Two FETs are formed on an Si substrate and each of them is constituted of a drain 2, a source 3 and an insulating gate consisting of an SiO_2 insulating film 4 and an Si_3N_4 insulating film 5. Further, a hydrophobic polymer film (polystyrene) 6 is formed on the insulating gate by a plasma polymerization method and an argon ion of accelerated energy is allowed to irradiate only the polymer film 6 on the insulating gate of one FET to form an irradiation treatment surface 7 and this FET is set to ISFET (ion-sensitive FET). Next, the remaining FET not subjected to ion irradiation treatment is set to REFET (reference FET) and a silver-silver chloride electrode 8 is formed on the insulating film 5 not belonging to both of ISFET and REFET on the substrate 1. By using this semiconductive chemical sensor, a minute specimen can be examined.